EDISEJA 21

LSU 110 / 32
Local Signalization Unit
User manual

Company:	*Device:*	*Document:*	*Code:*	*Version:*	*Date:*
Ediseja 21	LSU 110 / 32	User manual	LS3MUE01	V3	15.02.2015

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1 PREFACE

Liability statement

We have checked the contents of this manual to ensure that the descriptions of both hardware and software are as accurate as possible. However, deviations may occur so that no liability can be accepted for any errors or omissions contained in the information given.

The contents of this manual will be checked in periodical intervals, corrections will be made in the following editions.

We reserve the right to make technical improvements without notice.

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Copyright

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Explanation of the symbols

Read the instructions!

Device was tested with 2,5 kV AC voltage to check the device insulation.

Device ground terminal.

Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC; the affixed product label indicates that you must not discard this electrical/electronic product in domestic household waste.

Warnings

In this paper the following terms are used:

Danger

indicates that death, severe personal injury or substantial property damage will result if proper precautions are not taken.

Warning

indicates that death, severe personal injury or substantial property damage can result if proper precautions are not taken.

Caution

indicates that minor personal injury or property damage can result if proper precautions are not taken. This particularly applies to damage on or in the device itself.

General information

These paper contain the information that is necessary for the proper and safe operation of the described devices. This paper is intended for technically qualified personnel.

Warning!

Hazardous voltage is present inside the device during operation. Disregarding of safety rules can result in severe personal injury or property damage.

Only qualified personnel may work with described devices after being familiar with warnings and safety notices in this paper and other safety regulations.

Warning!

Device must operate completely assembled! Device must be used as described. No modifications of the device should be made.

Warning!

Do not open device while it is energized! Hazardous voltage is present inside the device. Disconnect all connectors before opening!

Warning!

If device is damaged disconnect it from power supply! Send it to the manufacturer for inspection.

Warning!

Connect to earth before attaching power supply!

2 DESCRIPTION

LSU 110 / 32 device is intended for local signalization in power distribution substations. It is also called alarm annunciator.

Power supply and binary inputs are made for standard voltages in substations; 48 V DC, 110 V DC or 220 V DC depends on ordering.

Device has 32 signal binary inputs (»DI1-DIn«), which controls dependent lamp (lamp1-n). Speed and mode of lamp flashing depends on setting and can be changed by buttons on front side of device.

Two modes of operation and four flashing lamp time can be set. First operation mode is latched until acknowledged, second mode just follow the binary input. In first mode following flash lamp time can be set: 0,5 s, 0,75 s, 1 s and 1,5 s. Each DI can be delayed, from 0 ms to 65,535 s.

Additional 4 binary inputs »DIA«, »DIB«, »DIC«, »DID« for special purpose like remote horn and lamp acknowledge and test.

Function of 6 binary outputs »DO1-DO6« is remote lamp and remote horn control, lamp acknowledge, and device ready function.

For sound alarming, device is equipped with the buzzer.

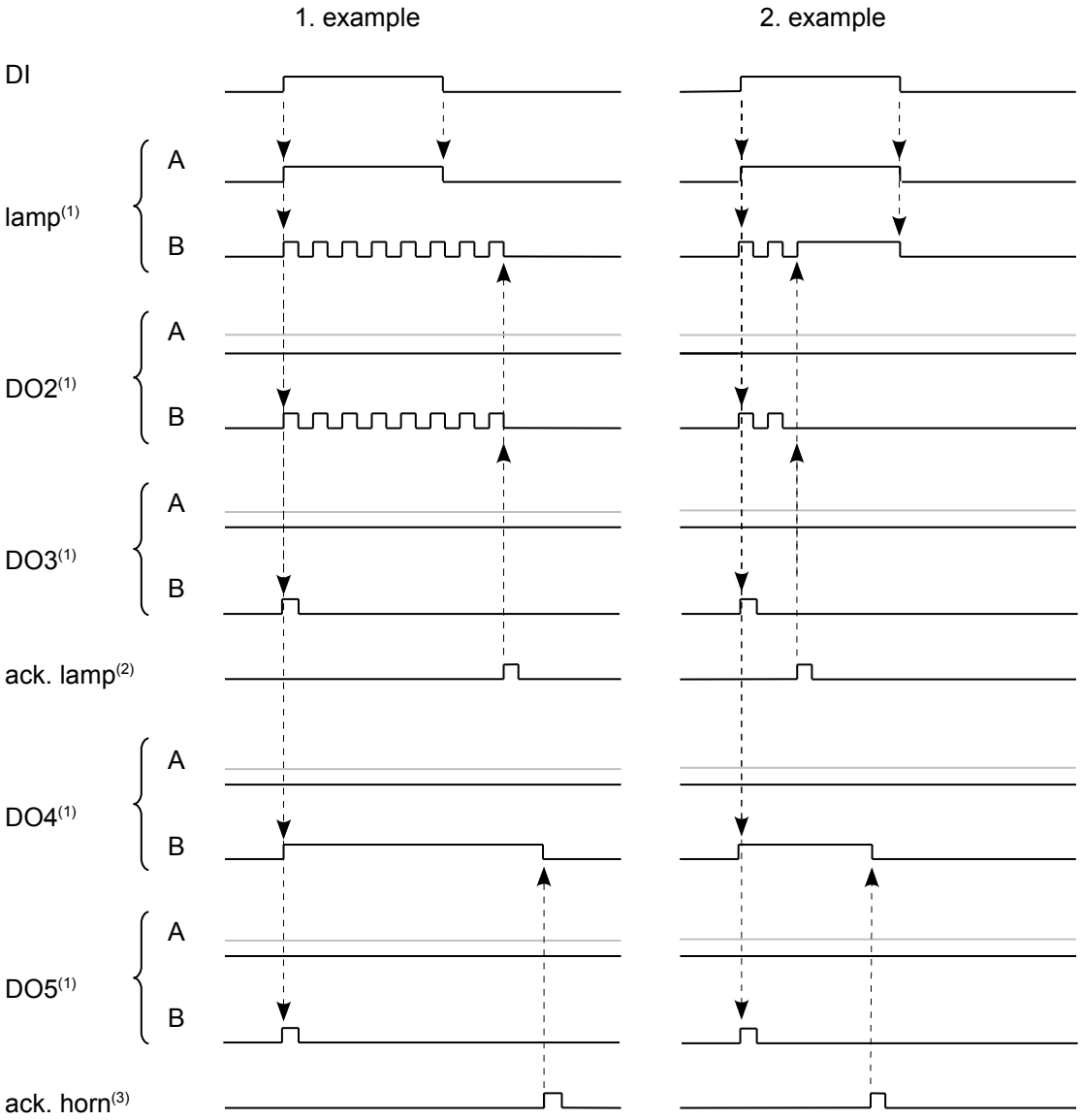
Red/green lamp on front side of device has a function of visual inspection of device operation.

3 OPERATION

3.1 Power on

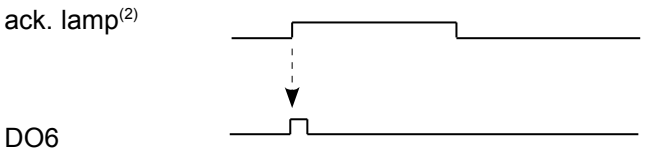
After power is applied, lamp »Power/Error« illuminate red. After all lamps are illuminated one by one, »Power/Error« lamp illuminate green. When »Power/Error« lamp is green, device is ready to operate and DO6 is activated (only device without special option (see ordering option 2)).

3.2 Normal operation



Operation of DO6:

device without special option (see ordering option 2):
DO6 has device ready function
device with special option 6 (see ordering option 2):



(1) depends on device setting (see chapter „SETTINGS“)

(2) button »ACK LAMP« pressed or input »DIB« activated

(3) button »ACK HORN« pressed or input »DIC« activated

When any binary input is activated, belonging lamp is also activated. Lamp flashing mode depends on device setting (see chapter „SETTINGS“):

A) when input is activated, lamp lights. When input is deactivated, lamp lights no more, without any acknowledgement. No DOs are activated.

B) (1. example) when input is activated, lamp start to flash. When input is deactivated, lamp flashes until lamps are acknowledged (button »ACK LAMP« pressed or input »DIB« activated).

(2. example) when input is activated, lamp start to flash. When lamps are acknowledged (button »ACK LAMP« pressed or input »DIB« activated) lamp lights until binary input is deactivated.

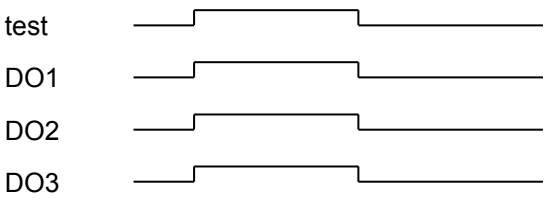
DO2 normal position is OFF. At activation of any binary input set at B mode, binary output DO2 starts to alternate from OFF to ON position and vice versa. Alternation time depends on lamps flashing time setting. When lamps are acknowledged (button »ACK LAMP« pressed or input »DIB« activated), DO2 goes to OFF position no matter of binary input states.

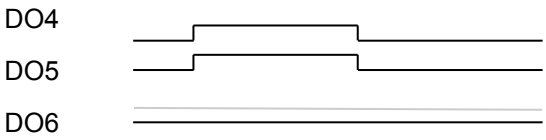
DO3 normal postion is OFF. At activation of any binary input set at B mode, binary output DO3 goes to ON position for 500 ms.

DO4 normal position is OFF. At activation of any binary input set at B mode, binary output DO4 goes to ON position. It stays in that position until horn is acknowledged (button »ACK HORN« pressed or input »DIC« activated).

DO5 normal postion is OFF. At activation of any binary input set at B mode, binary output DO5 goes to ON position for 500 ms.

3.3 Operation during test





When test is activated (button »TEST« pressed or inputs »DIA« activated) all lamps lights. Binary outputs »DO1« to »DO5« are also activated.

When test is deactivated (button »TEST« not released and inputs »DIA« deactivated) all lamps start to flash as they were triggered by binary input in normal operation. DOs are set to the position as they were triggered by binary input in normal operation.

3.4 Lamps, buttons, binary inputs and outputs description

Each lamp 1-32 has its dependent binary input 1-32. Lamp lightning depends on state of binary input and software settings.

Additional two colour lamp »POWER/ERROR« signalize state of device. Red lamp means device is starting or device is not operating correctly. Green lamp means device is fully operational.

On front side there are four buttons:

- »TEST« - testing device
- »ACK LAMP« - acknowledge active lamps and lamp dependent DOs
- »ACK HORN« - acknowledge horn and dependent DOs
- »HORN ON/OFF« - enabling and disabling internal horn

Additional inputs:

- »DIA« – external test; activation of that input has equal effect as pressing button »TEST«.
- »DIB« – external acknowledge of lamps; activation of that input has equal effect as pressing button »ACK LAMP«.
- »DIC« – external acknowledge of horn; activation of that input has equal effect as pressing button »ACK HORN«.
- »DID« – without function.

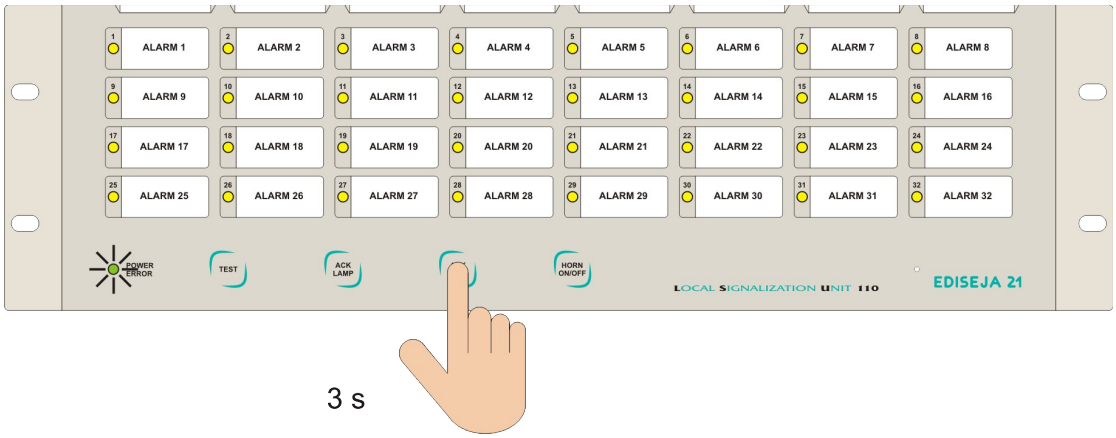
Additional outputs:

- »DO1« – external test, active until button »TEST« is pressed or input »DIA« is active.
- »DO2« – external lamp control, alternating until button »ACK LAMP« pressed or »DIB« activated.
- »DO3« – external lamp activation, active for 500 ms.
- »DO4« – external horn control, active until button »ACK HORN« pressed or »DIC« activated.
- »DO5« – external horn activation, active for 500 ms.
- »DO6« – device without special option (option 2): device ready function
  – device with special option (option 2) 6: external lamp acknowledge, active for 500 ms.

4 SETTINGS

Setting procedure:

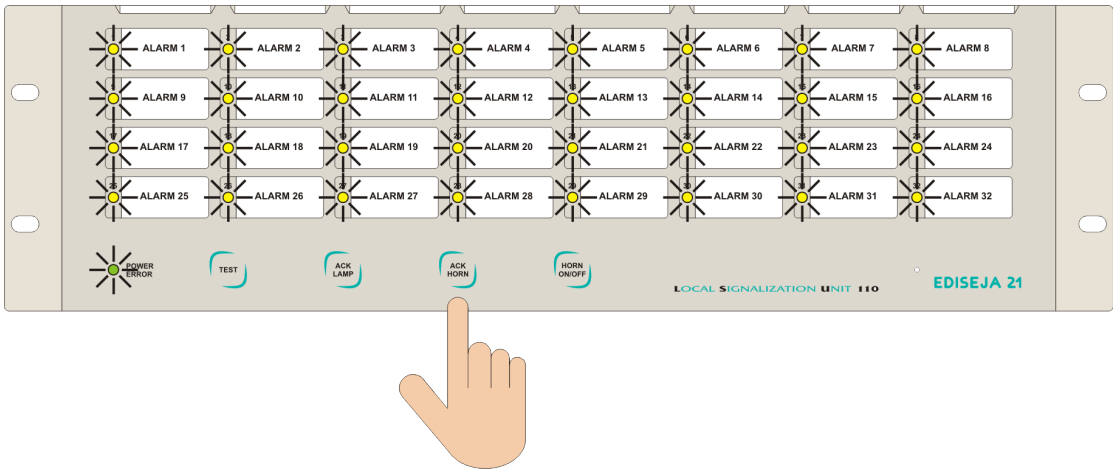
- Press and hold button »ACK HORN« for approximately 3 s.



3 s

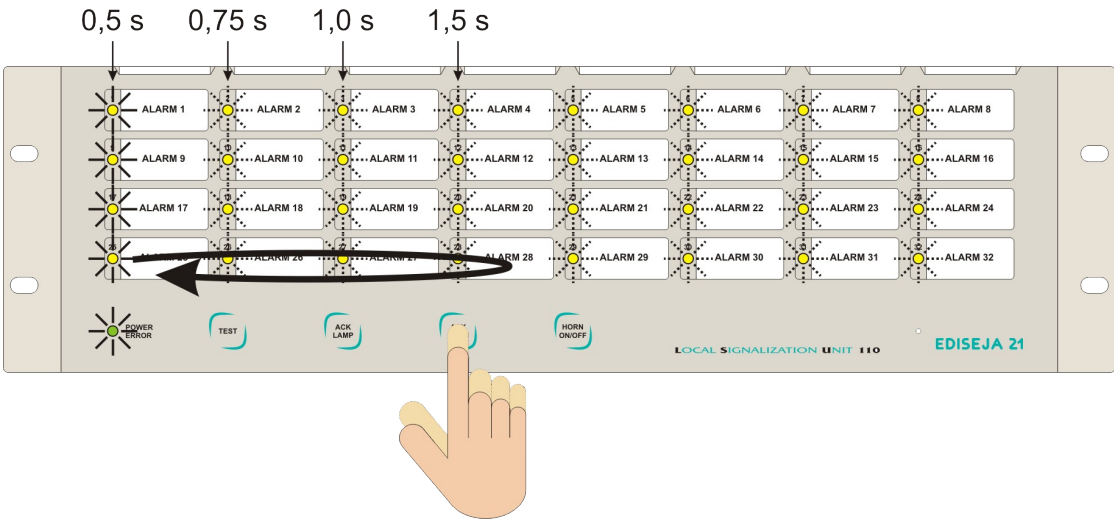
- All lamps goes ON for 1 s.

1 s

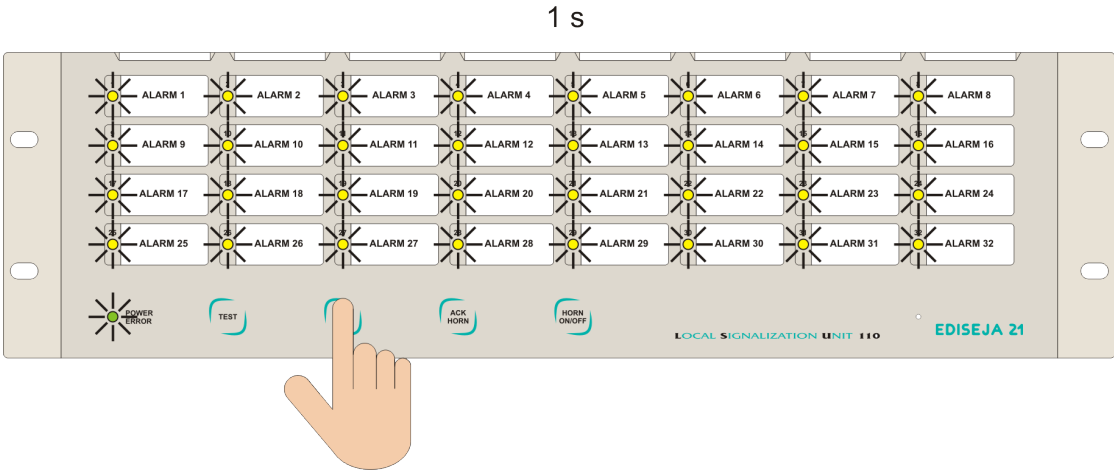


- Device is now in set lamp flashing speed mode. All lamps are flashing except first, second, third or fourth row column. Which column is ON depends on current setting. Column which is ON marks the speed of lamp is flashing:
  - first column ON - flashing on 0,5 s
  - second column ON - flashing on 0,75 s
  - third column ON - flashing on 1 s
  - fourth column ON - flashing on 1,5 s.

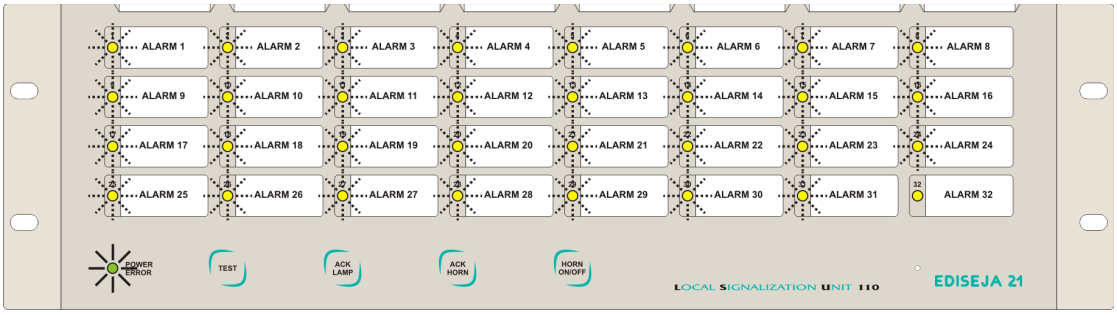
- Change the speed of lamp flashing with button »ACK HORN«.



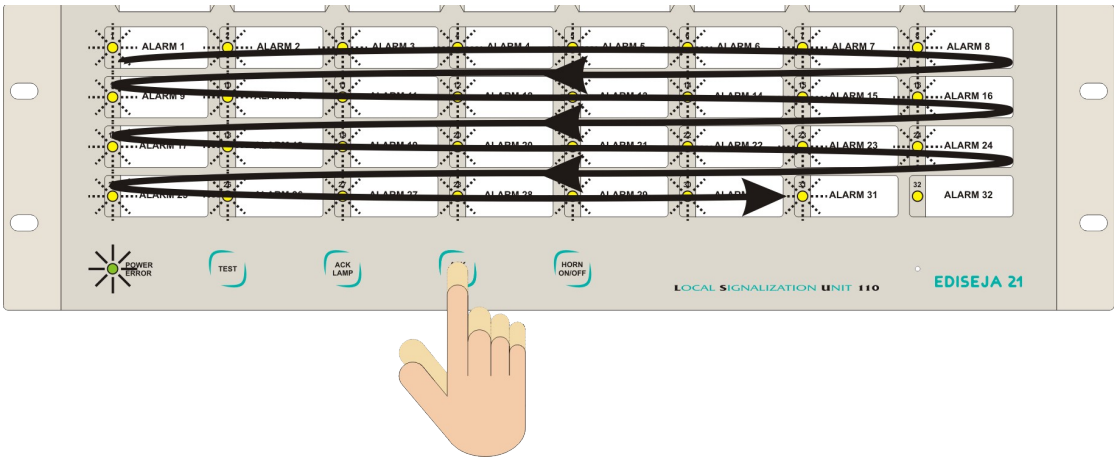
- All lamps goes ON for 1 s. Device is now in set lamp logic mode.



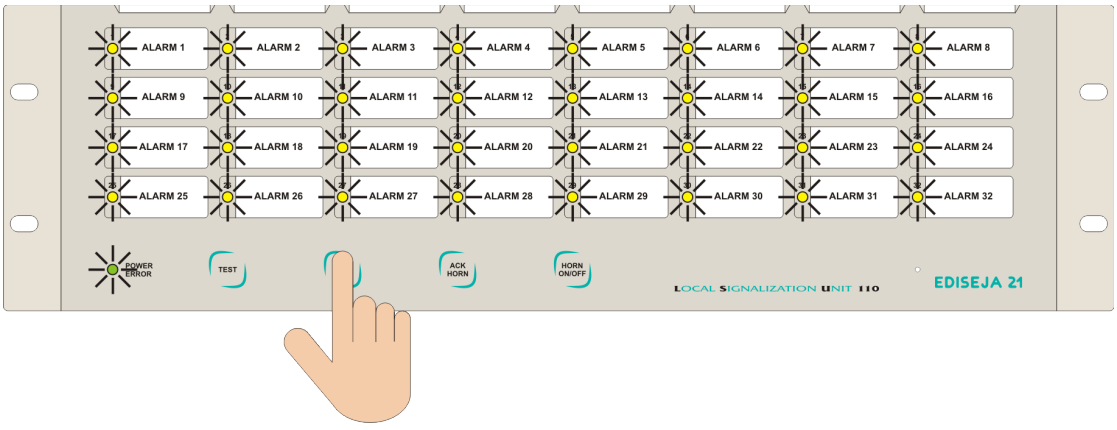
- Lamp logic setting:
  - lamp flashing means, that when dependent input will go active, lamp will flash until »ACK LAMP« is pressed („OPERATION„ (»lamp – B«))
  - lamp ON means, that lamp wil follow the input state; active inpute lamp ON, non active input lamp OFF (chapter „OPERATION„ (»lamp – A«))
  - lamp OFF means lamp we are currently set (lowest right).



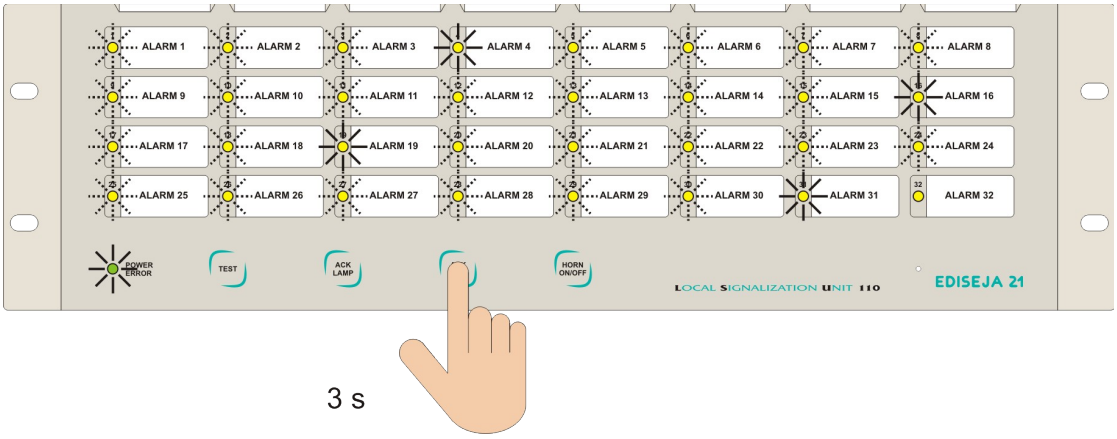
- Move to lamps by pressing button »ACK HORN«.



- One lamp logic setting acknowlege with button »ACK LAMP«.

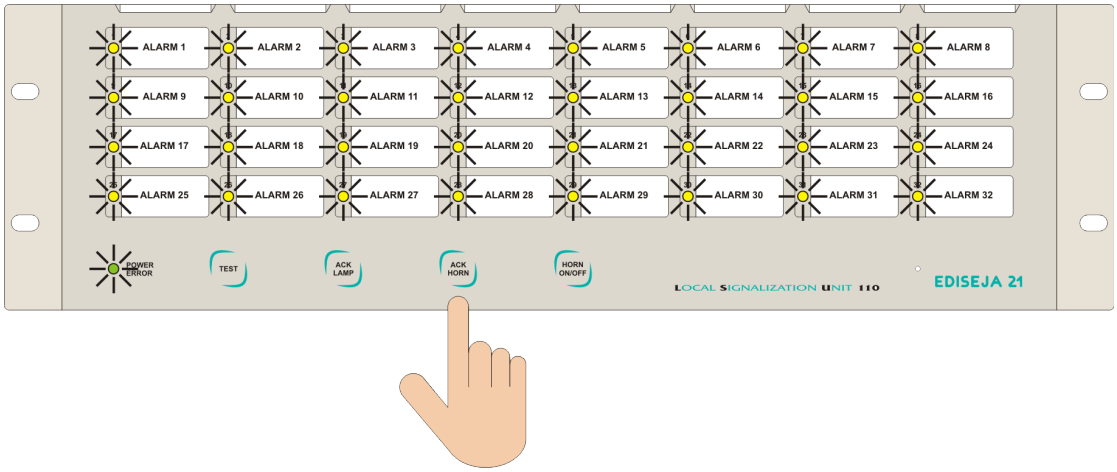


- When all lamps logic are set press and hold button »ACK HORN« for approximately 3 s.



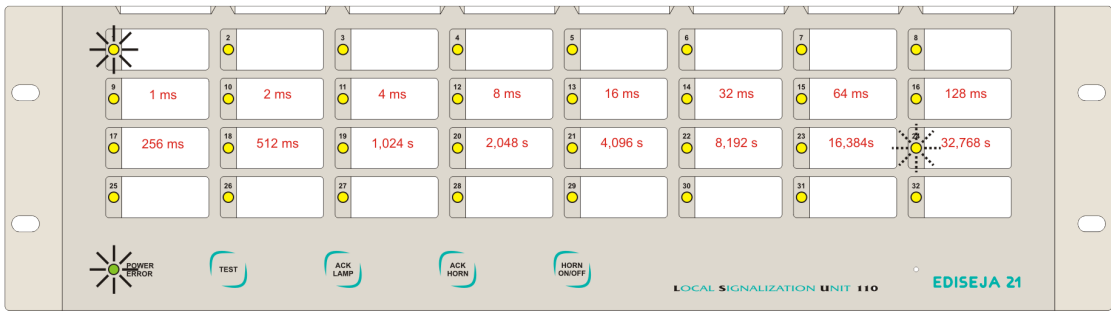
- All lamps goes ON for 1 s.

1 s

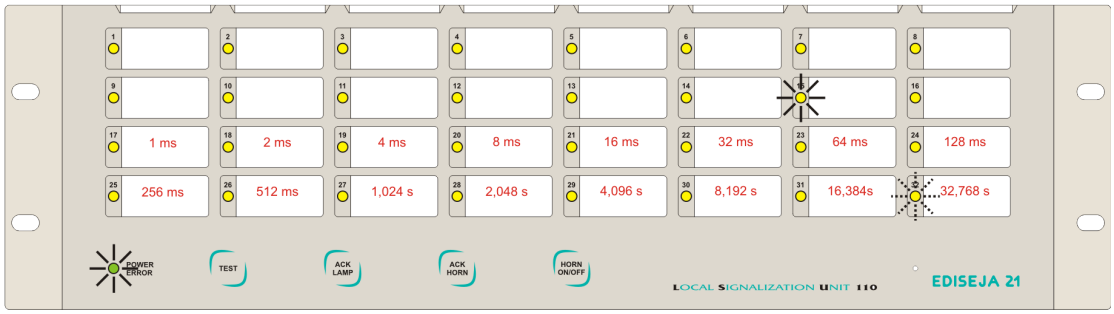


- First left lamp is ON and it marks the lamp (binary inputs) to be set. Last righ lamp is flashing. Flashing lamp marks the setting position.
- Set time delay for each lamp according to the pictures:

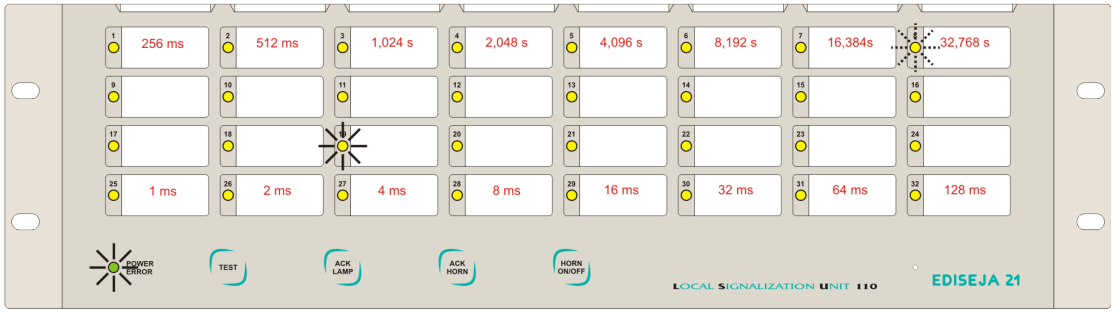
TIME SETTINGS LEDS 1-8



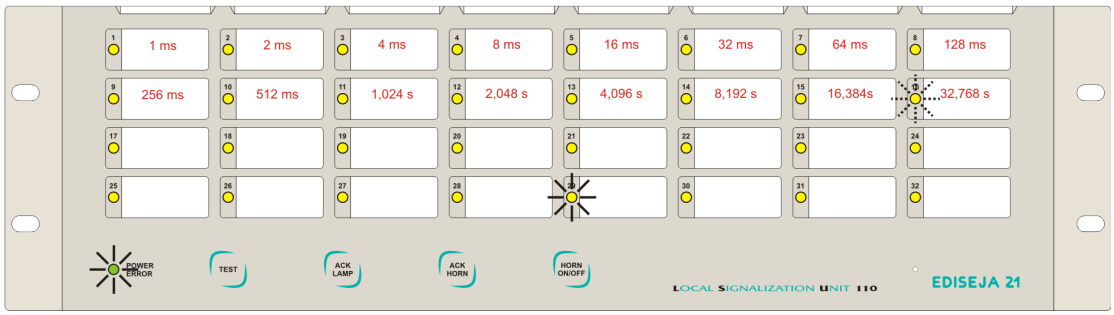
TIME SETTINGS LEDS 9-16



TIME SETTINGS LEDS 17-24

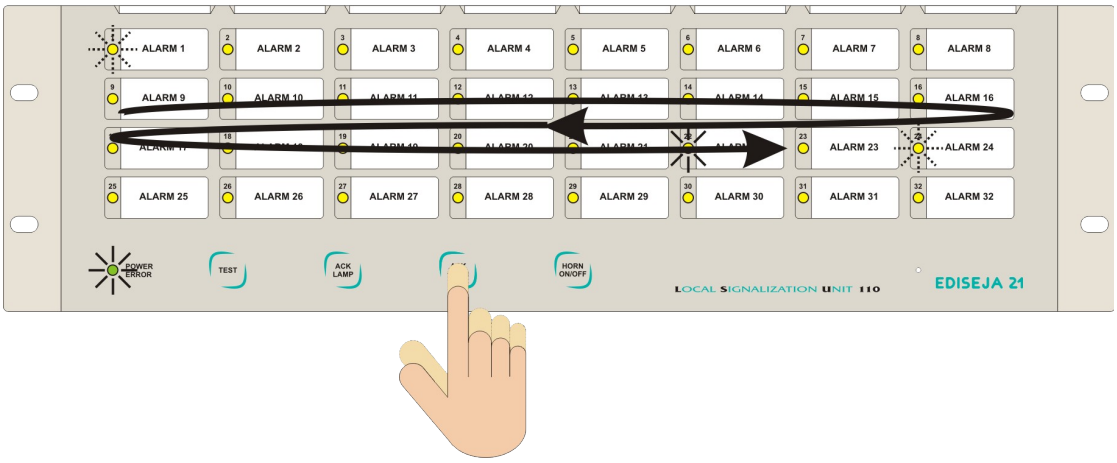


TIME SETTINGS LEDS 25-32



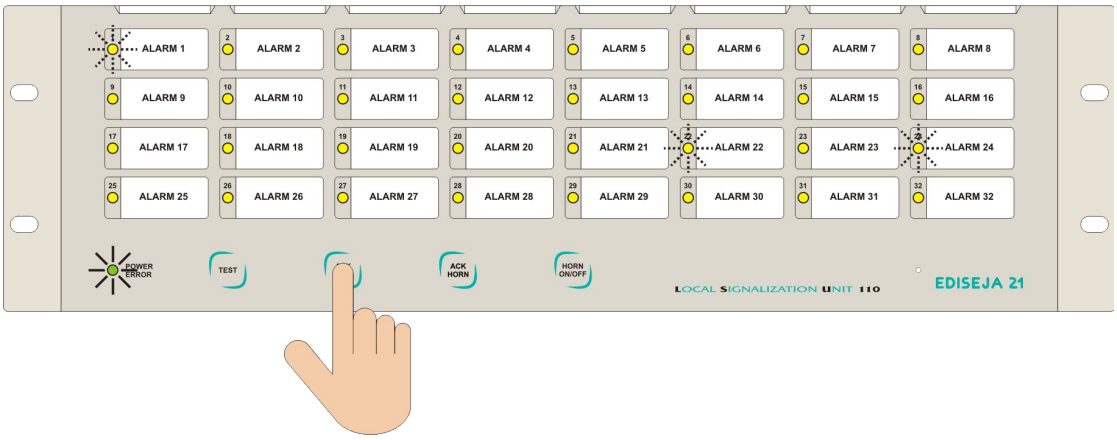
- Move between time settings by pressing button »ACK HORN«.

TIME SETTINGS CIRCULATION



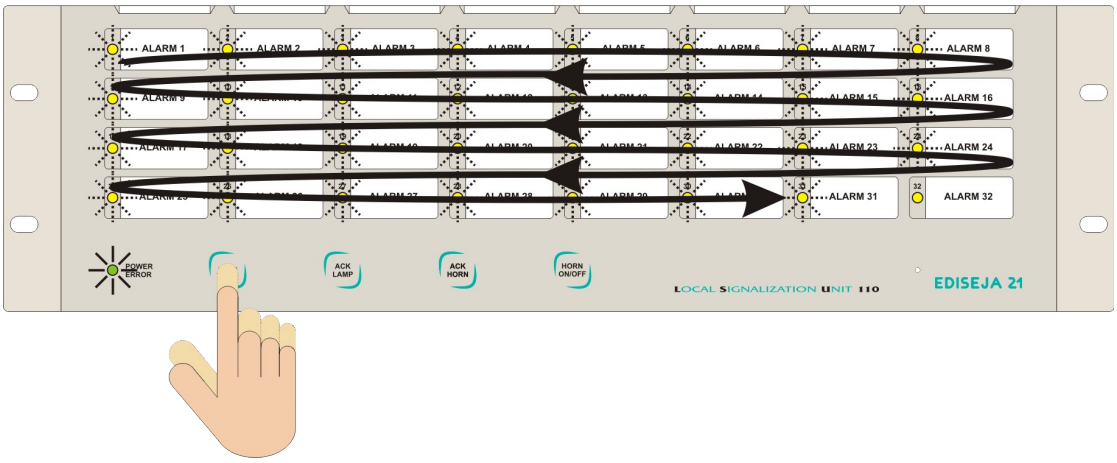
- Select / deselect time setting by pressing button »ACK LAMP«. If lamp is ON, selected time delay is active. If lamp is OFF, selected time delay is not active.

SELECT / DESELECT TIME SETTING

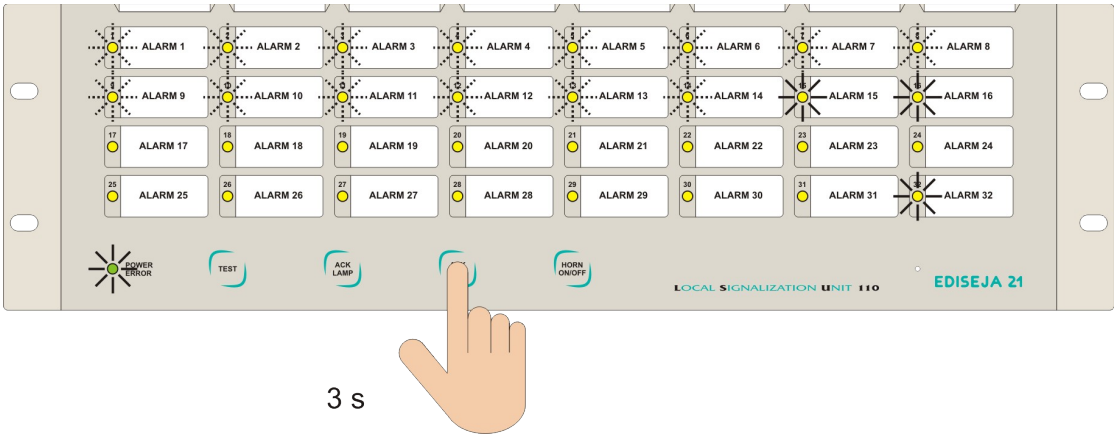


- Move between lamps by pressing button »TEST«.

LEDS (DIGITAL INPUT) CIRCULATION

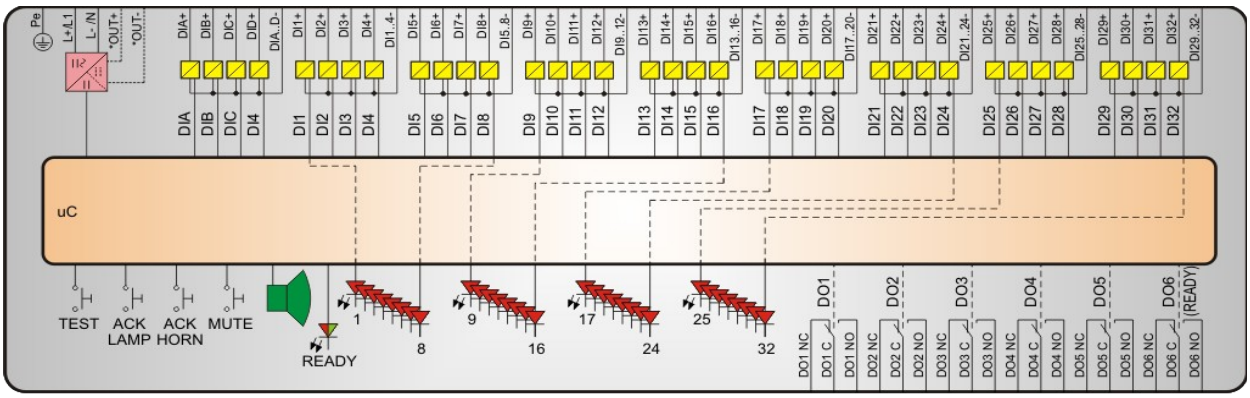


- When time delays for all lamps are set press and hold button »ACK HORN« for approximately 3 s.



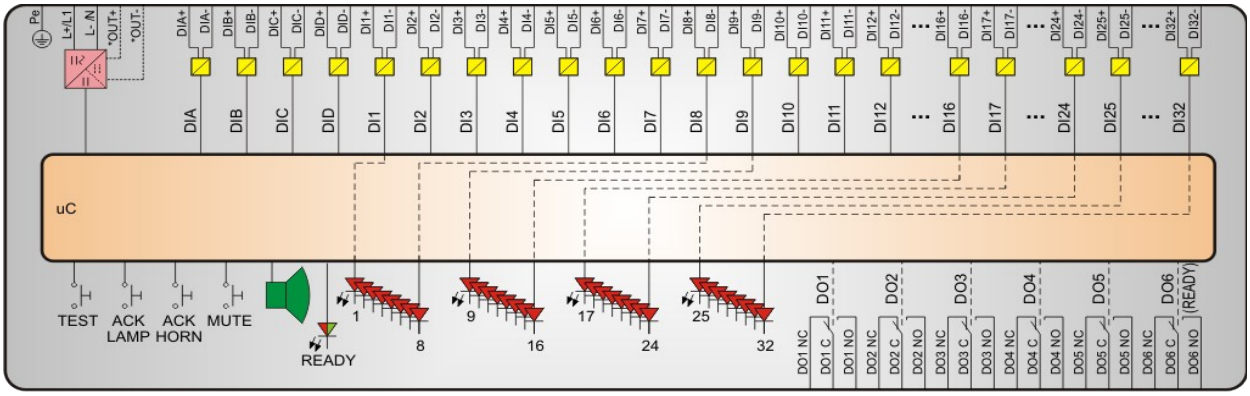
- All lamps goes ON for 1 s.
- Device goes into reset.
- After reset device is in operating mode.

5 SCHEMATICS



* OPTION "O" ONLY (48 V DC OUTPUT)

Picture 1: LSU 110 / 32.x.x.x.x and LSU 110 / 32.x.x.x.x.O schematic



* OPTION "F" ONLY (48 V DC OUTPUT)

Picture 2: LSU 110 / 32.x.x.x.x.S and LSU 110 / 32.x.x.x.x.F schematic

6 INSTALLATION

Warning!

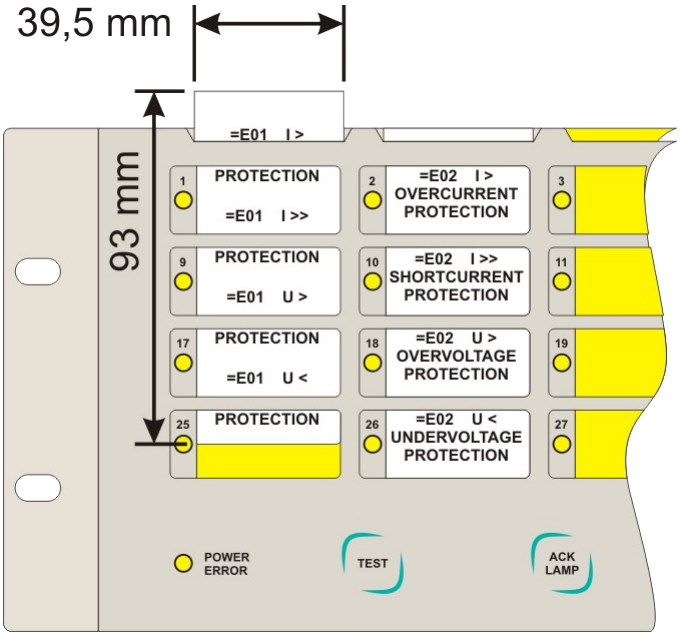
Hazardous voltage is present inside the device during operation. Disregarding of safety rules can result in severe personal injury or property damage.

Only qualified personnel may work with described devices after being familiar with warnings and safety notices in this paper and other safety regulations.

Following instruction must be taken into consideration:

- The device must be accessible to qualified personnel only.
- The device is permitted to operate in enclosed housing or cabinet only.
- The device location must be vibration-free.
- The admisible operating temperature must be observed.
- Check the device for damage at unpacking. If device is damaged it must not be installed, but it should be send to the manufacturer for repair.
- The device should not be opened.
- Attach ground wire before attaching power supply. Device must be grounded during operation!
- Single core or stranded wire 0,5 – 2,5 mm^2 must be used for power supply connection. If stranded wire is used, ferrules must be used to prevent fraying. Recommended stripping lenght is 5 mm.

Picture 3: LSU 110 / 32 installation



Picture 4: LSU 110 / 32 inserted papers dimensions

7 COMMISSIONING AND MAINTENANCE

7.1 COMMISSIONING

Warning!

Hazardous voltage is present inside the device during operation. Disregarding of safety rules can result in severe personal injury or property damage.

Only qualified personnel may work with described devices after being familiar with warnings and safety notices in this paper and other safety regulations.

Following instruction must be taken into consideration:

- Device must operate completely assembled! Device must be used as described. No modifications of the device should be made.
- Attach ground wire before attaching power supply. Device must be grounded during operation!
- Check if the power supply voltage complies with device operation voltage.
- Do not open device while it is energized! Hazardous voltage is present inside the device.

7.2 MAINTENANCE

Device is maintenance-free. Do not use liquids for cleaning the unit. Use water moisturised mop. Disconnect all connectors before cleaning.

8 TECHNICAL DATA

Power supply			
Input voltage	88 – 250 V DC		
Power consumption	110 V DC	7 W (max)	< 3 W (typical)
	220 V DC	7 W (max)	< 3 W (typical)
Voltage dips	> 20 ms		
Connector type	screw type „MSTB“ Phoenix 2pin		
Power supply wire	crossection	0,5 – 2,5 mm^2	
	type	single or stranded wire	
	voltage rating	500 V	
	colour	depends on used standard	
Ground wire	crossection	Cu flat, 40 mm^2	
	colour	yellow-green or natural (non isolated)	

Binary input		
Input voltage	110 V DC	88 – 121 V DC
	220 V DC	176 – 250 V DC
Input current	110 V DC	1 mA
	220 V DC	1 mA
Connector type	screw type „MSTB“ Phoenix 5 pin	
Wire	crossection	0,5 – 2,5 mm^2
	type	single or stranded wire
	voltage rating	500 V
	colour	depends on used standard
Time delay setting	0-65535 ms, 1 ms step, ± 5 %	

Binary output		
Max breaking voltage	440 V AC	
Max current	AC	5 A at 250 V
	DC	5 A at 32 V (resistive bourden)
		1,3 A at 48 V (resistive bourden)
		0,4 A at 110 V (resistive bourden)
		0,35 A at 220 V (resistive bourden)
Connector type	screw type „MSTB“ Phoenix 3 pin	

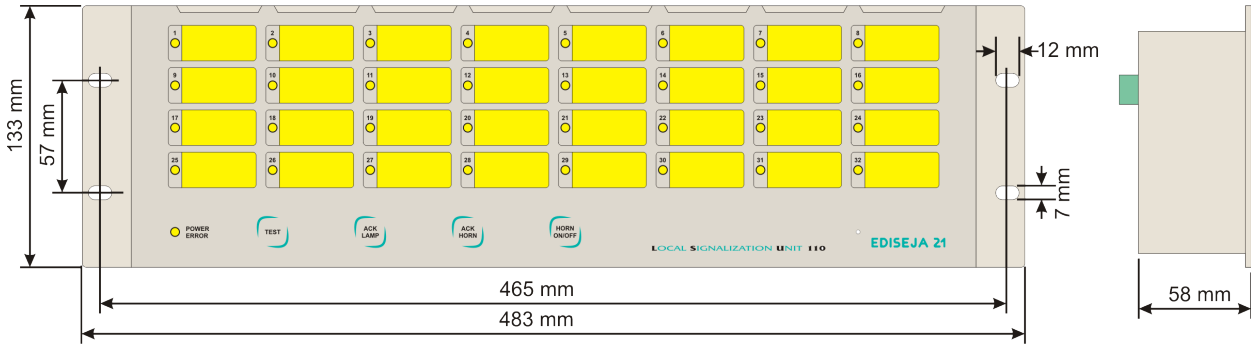
Binary output		
Wire	crossection	0,5 – 2,5 mm^2
	type	single or stranded wire
	voltage rating	500 V
	colour	depends on used standard

Buzzer	
Sound power level	85 dB

Operation	
Flash lamp time	Programmable 0,5, 0,75, 1 or 1,5 s
Time to trigger	> 13 ms

Device			
Weight	1 kg		
Dimensions (see picture)	483 mm	133 mm	58 mm
Temperature range	-10 °C to + 55 °C		
Humidity operating	up to 95 % (noncondensing)		
Enclosure	Material	Al	
	Protection - front	IP 40	
Class	I		
Overvoltage category	II		
Altitude	up to 2000 m		

9 DIMENSIONS



Picture 5: LSU 110 / 32 dimensions

10 ORDERING

ORDERING CODE: **LSU 110 /** □ . □ . □ . □ . □ . □ . □ - □ . □

Number of lamps:
number of lamps** 32

Power supply voltage:
24 V DC 1*
48 V DC 2*
110 V DC 3
220 V DC 4

Binary input voltage:
24 V DC 1
48 V DC 2
110 V DC 3
220 V DC 4

Enclosure:
19" 3U rack mount V

Lamp colour:
yellow ..... Y
red ..... R
green ..... G

Option 1: (see chapter „Schematics“)
none; without additional option 1 ..... N
48 V DC output for DI supply ..... O
separated digital inputs ..... S
48 V DC output for DI supply and separated digital inputs ..... F

Option 2:
none; without additional option 2 ..... N
DO6 output intended for lamp acknowledge 6

Software Version:
software version ..... (leave empty)

Software Revision:
software revision ..... (leave empty)

Example: **LSU 110 / 32.3.3.V.R** is
32 channel local signalization unit, with 110 V DC power supply, 110 V DC binary inputs, 19" 3U rack mount enclosure, red lamps

* in development

** if only 16 lamps are needed, see LSU 100 / 16 user manual

Contact:

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